



MIRACLES YOU'LL SEE

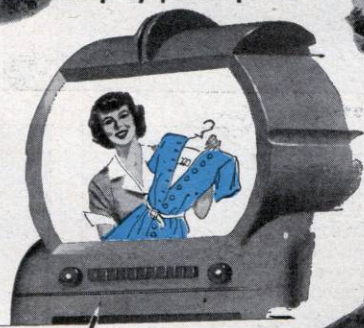
IN THE NEXT FIFTY YEARS

By Waldemar Kaempffert
Science Editor, The New York Times

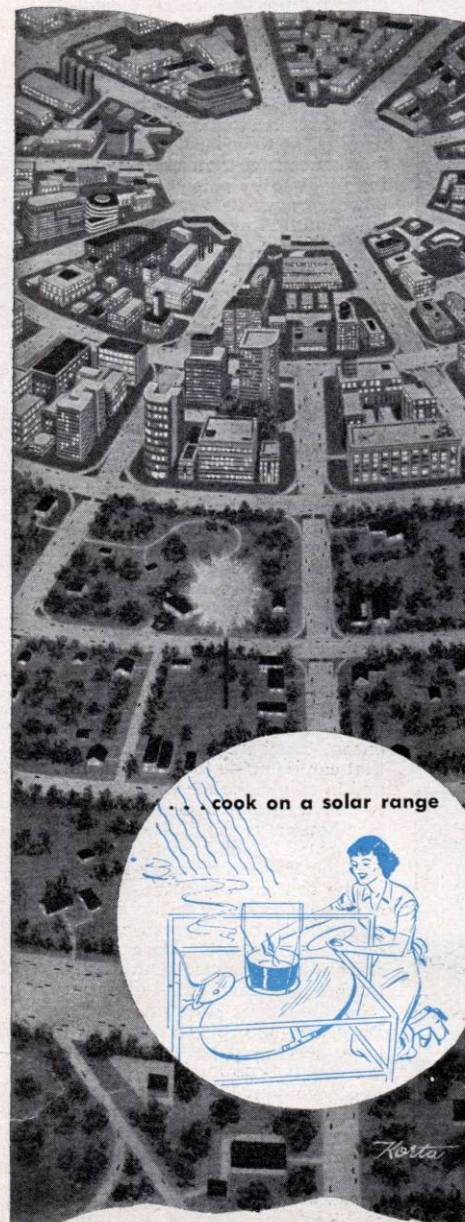


You'll eat food
from sawdust . . .

shop by picture-phone . .



Drop in by rocket plane on Tottenville, the sootless garden city where you'll live in scientific comfort in A.D. 2000. You'll cook by solar heat, shop by television in the world just around the corner



. . . cook on a solar range



WHAT WILL the world be like in A.D. 2000? You can read the answer in your home, in the streets, in the trains and cars that carry you to your work, in the bargain basement of every department store. You don't realize what is happening because it is a piecemeal process. The jet-propelled plane is one piece, the latest insect killer is another. Thousands of such pieces are automatically dropping into their places to form the pattern of tomorrow's world.

The only obstacles to accurate prophecy are the vested interests, which may retard progress for economic reasons, tradition, conservatism, labor-union policies and legislation. If we confine ourselves to processes and inventions that are now being hatched in the laboratory, we shall not wander too far from reality.

The best way of visualizing the new world of A.D. 2000 is to introduce you to the Dobsons, who live in Tottenville, a hypothetical metropolitan suburb of 100,000. There are parks and playgrounds and green open spaces not only around detached houses but also around apartment houses. The heart of the town is the airport. Surrounding it are business houses, factories and hotels. In concentric circles beyond these lie the residential districts.

Tottenville is as clean as a whistle and quiet. It is a crime to burn raw coal and pollute air with smoke and soot. In the homes electricity is used to warm walls and to cook. Factories all burn gas, which is generated in sealed mines. The tars are removed and sold to the chemical industry for their values, and the gas thus laundered is piped to a thousand communities.

The highways that radiate from Tottenville are much like those of today, except that they are broader with hardly any curves. In some of the older cities, difficult to change because of the immense investment in real estate and buildings, the highways are double-decked. The upper deck is for fast nonstop traffic; the lower deck is much like our avenues, with brightly illuminated shops. Beneath the lower deck is the level reserved entirely for business vehicles.

Tottenville is illuminated by electric "suns" suspended from arms on steel towers 200 feet high. There are also lamps which are just as bright and varicolored as those that now dazzle us on every Main



Copyright 1947, Chesley Bonestell from "The Conquest of Space"

In 2000, rocket passengers may arch through space from New York to San Francisco in less than two hours

for cutting tools and for massive machinery. The light metals have largely displaced it. Ways have been found to change the granular structure so that a metal is ultrastrong in a desired direction and weaker in other directions. As a result, the framework of an industrial or office building or apartment house is an almost lace-like lattice.

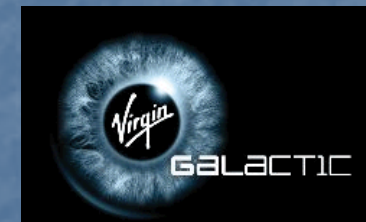
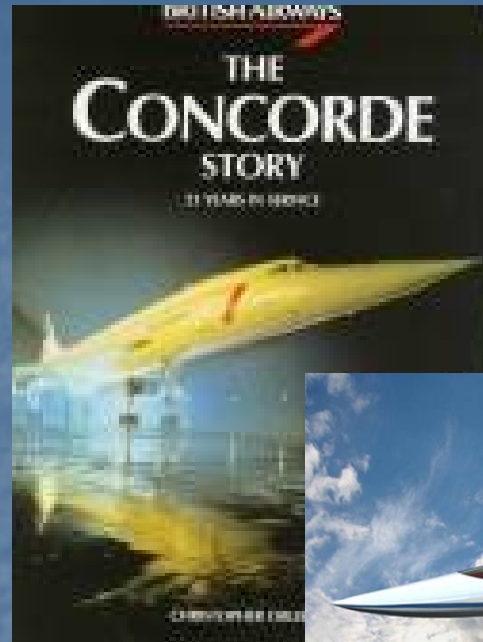
Thanks to these alloys, to plastics and to other artificial materials, houses differ from those of our own time. The Dobson house has light-metal walls only four inches thick. There is a sheet of insulating material an inch or two thick with a casing of sheet metal on both sides.

This Dobson air-conditioned house is not a prefabricated structure, though all its parts are mass-produced. Metal, sheets of

plastic and aerated clay (clay filled with bubbles so that it resembles petrified sponge) are cut to size on the spot. In the center of this eight-room house is a unit that contains all the utilities—air-conditioning apparatus, plumbing, bathrooms, showers, electric range, electric outlets. Around this central unit the house has been pieced together. Some of it is poured plastic—the floors, for instance. By 2000, wood, brick and stone are ruled out because they are too expensive.

It is a cheap house. With all its furnishings, Joe Dobson paid only \$5000 for it. Though it is galeproof and weatherproof, it is built to last only about 25 years. Nobody in 2000 sees any sense in building a house that will last a century.

Everything about the Dobson house is



Technology and Project Management

Growing Together



Michael L. Graybill
Booz Allen Hamilton





Goals of Tech Advances

- Add value to project deliverables
- Enhance project team's ability to develop deliverables

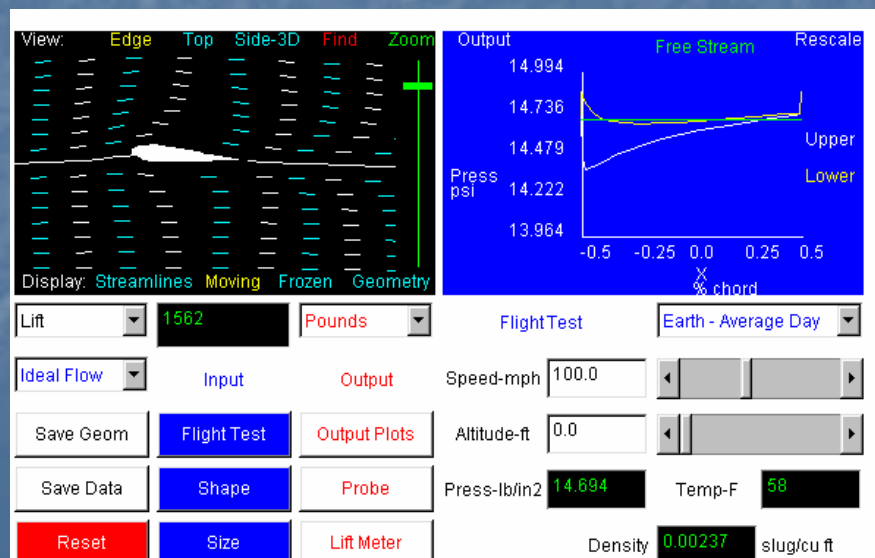
Direct-Replacement Developments



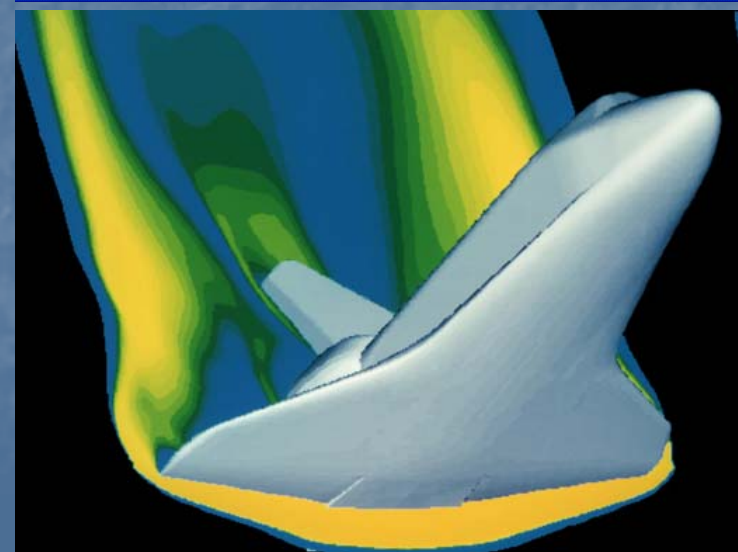
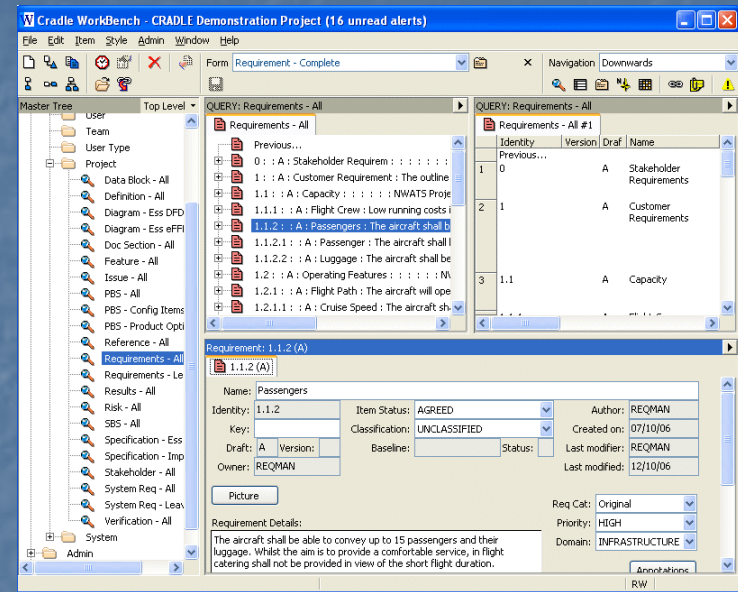
Electrical Slide Rule Maneuvered by Push Button

This jumbo-size slide rule was constructed so that intricate mathematical problems could be worked out with push-button ease. An electric motor triggered by a small electronic "brain" maneuvers the slide rule into calculating position at the touch of a few buttons.

POPULAR MECHANICS



Process-Changing Developments



Technology Now

The Twitter logo, featuring the word "twitter" in a lowercase, blue, sans-serif font.The Myspace logo, featuring a black silhouette of three people and the text "myspace" in a bold, black, sans-serif font, with the tagline "a place for friends" in a smaller font below it.The Facebook logo, featuring the word "facebook" in a white, sans-serif font on a blue rectangular background.The LinkedIn logo, featuring the words "Linked in" in a black, sans-serif font, with "in" in a blue square.The Flickr logo, featuring the word "flickr" in a blue, sans-serif font, with a small "BETA" tag in the top right corner.The BlackBerry logo, featuring a green BlackBerry icon and the word "BlackBerry" in a green, sans-serif font.The iPhone logo, featuring the Apple logo and the word "iPhone" in a white, sans-serif font on a black rectangular background.The YouTube logo, featuring the words "You Tube" in a white, sans-serif font, with "Tube" in a red rounded rectangle.The Wii logo, featuring the word "Wii" in a grey, sans-serif font on a white rectangular background with a blue border.

Behind the Apps – Trends in Tech

- Services providing “micro-news” with minute-by-minute updates
- User-generated applications and services
- Multiple means used to extend networks past PCs to everyday devices
- Moving towards access to any service or information, any time, anywhere
- Processing power growing almost limitlessly, power consumption and portability becoming new benchmarks

Leveraging Tech Trends

- How do you know what you know?
 - Status updates
 - Engineering
- Integration of toolsets?
- Flexible integration of microtools

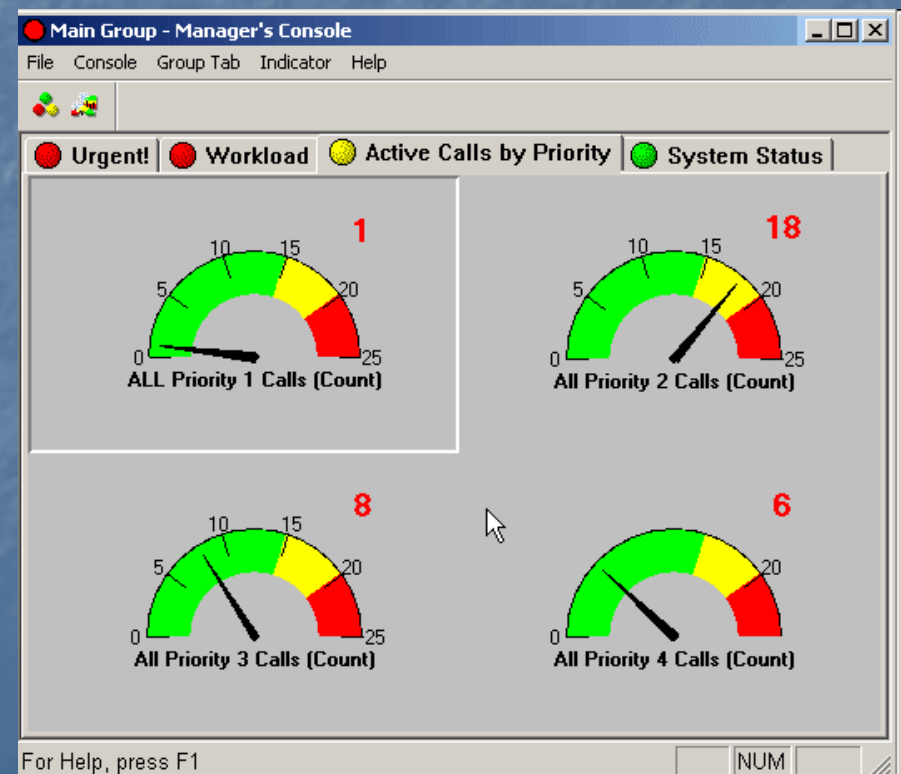
New capabilities or New Risks?

- Balance of technology vs process



New capabilities or New Risks?

- Is more data better?
 - Micromanaging
 - Random metrics



New capabilities or New Risks?

- As technology evolves and society progresses, so do regulations
 - HIPAA
 - FOIA
 - Privacy Act
 - SOX

New capabilities or New Risks?

- Technology-added vs Value Added
 - Development & Fielding Cost
 - Training Cost
 - Sustaining Cost
 - New Vulnerabilities



High Stakes / Spectacular Failures

System Function & Responsible Organization	Years of Work (outcome)	Approx. Cost M=Million, B=Billion
Vehicle Registration, Drivers license - Calif. DMV	1987-1994 (scrapped)	\$44M
Automated reservations- United Air Lines	1960s /Early 1970s (scrapped)	\$50M
State wide Automated Child Support System (SACSS) – California	1991-1997 (scrapped)	\$110M
Hotel reservations and flights - Hilton, Marriott, Budget, American Airlines	1988-1992 (scrapped)	\$125M
Advanced Logistics System - Air Force	1968-1975 (scrapped)	\$250M
Taurus Share trading system - British Stock Exchange	1990-1993 (scrapped)	\$100 - \$600M
London Ambulance Service Computer Aided Dispatch System	1991-1992 (scrapped)	\$2.5M, 20 lives

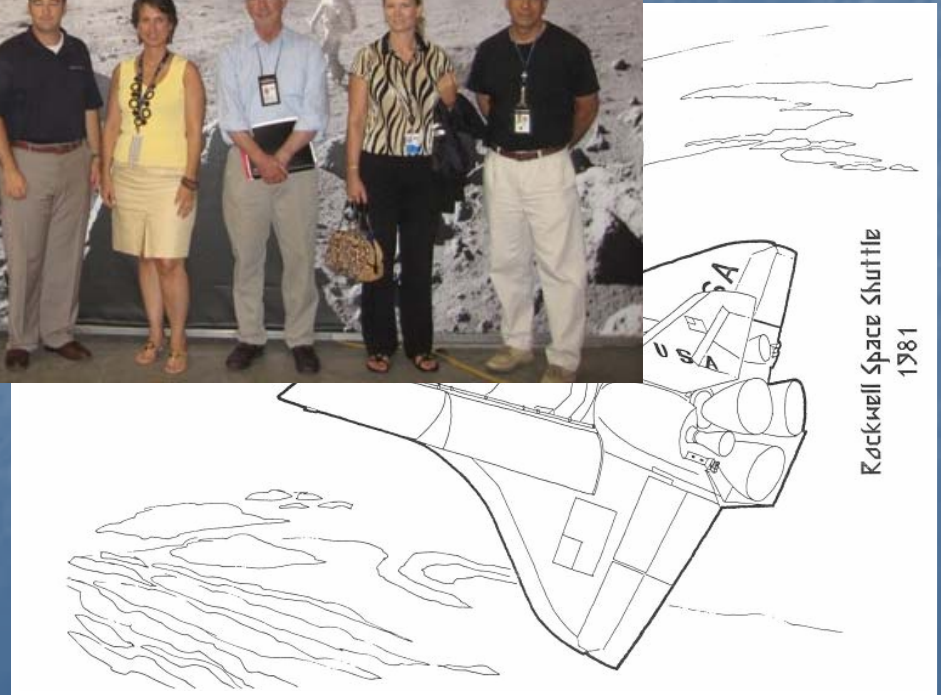
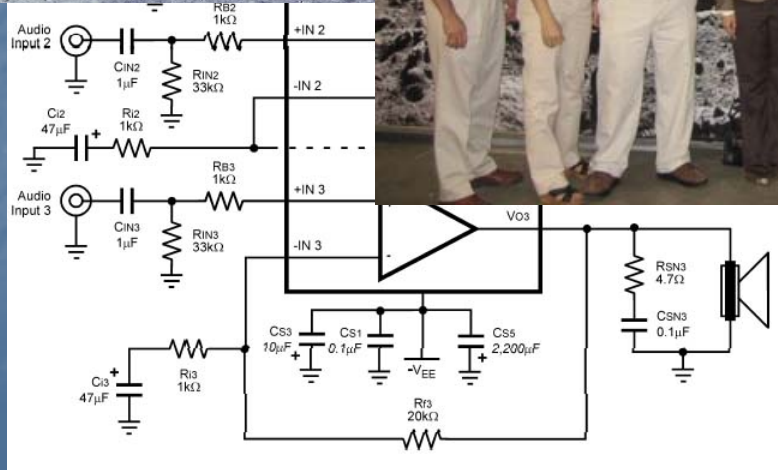
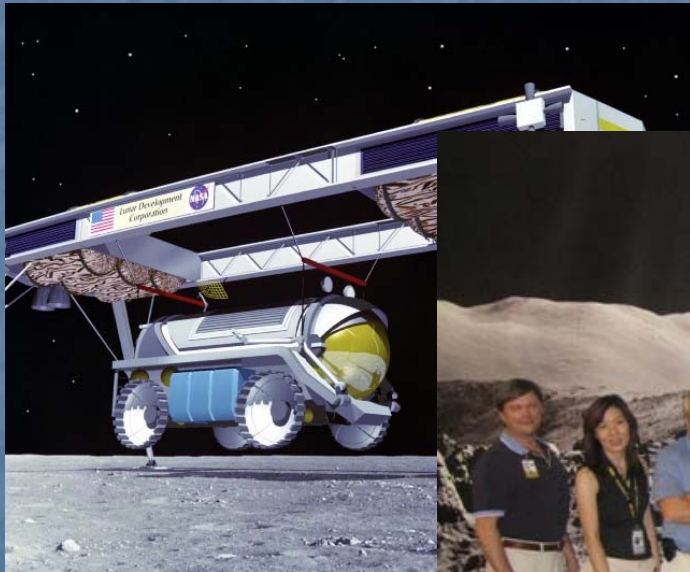
NASA Projects:

- X-33
- HyTex
- DSCOVR
- NuSTAR
- Gravity Probe B
- SETI

Challenge for Today's PM

- Leverage new technologies to achieve project goals
- Avoiding pitfalls from new technologies
 - Personal
 - Introducing additional technical risk
- Expectation Management

Conclusion



Rockwell Space Shuttle
1981

Questions?